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EXAMINER	
DANIELS, ANTHONY J	
ART UNIT	PAPER NUMBER
2615	

DATE MAILED: 09/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/083,352	NAKAMURA, HIDEO	
	Examiner	Art Unit	
	Anthony J. Daniels	2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☑ Responsive to communication(s) filed on *14 June 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The amendment, filed 6/14/2005, has been entered and made of record. Claims 1-20 are pending in the application.

2. The amendments to the claims, specification, and title have overcome examiner's objections.

Response to Arguments

3. Applicant's arguments filed 6/21/2005 have been fully considered but they are not persuasive. In regard to the applicant's arguments (see p. 13-16) in regard to claim 1, the examiner respectfully disagrees. Examiner would like to thank applicant for providing illustration to help clear up the differences between the Udagawa et al. and the present invention. Examiner agrees that there are differences; however, examiner cannot agree that the claims recite such differences. On page 13, last paragraph, applicant submits that the prior art does not teach "...while retaining the signal charges of specific pixels of those read in the previous step mentioned above by maintaining said specific pixels in the read-out state, transferring the other signal charges read in said previous step so as to add the transferred signal charges to the retained signal charges..." It respectfully submitted that Udagawa et al. does teach this, but not in the way the present invention teaches. Udagawa et al. teaches lowering a potential to add C1 and M1 together and C3 and G3 together (Col. 4, Lines 35-42). Although there is no explicit teaching of the C1 being transferred to be added to M1, it is inherent that this is performed. A

potential barrier exists to store charge (electrons) in a row direction. Without such a barrier, the electrons would ***drift*** in the direction of the lowest potential barrier. In the operation of Udagawa et al., after the potential has been lowered, there is an inherent drift or transfer of charges toward a lower potential. This phenomenon is what allows for the pixels, C1 and M1, to be added or mixed. Since there is no way for the charges to mix if they are separate, this is evidentiary of the transferring phenomenon that is caused by the lowering of the potential. In regard applicant's arguments (p. 15, 2nd paragraph), "read-out state" is not defined in the specification as it is defined in the arguments; therefore, the interpretation of the examiner is acceptable due to the fact that the charges read in the previous step are retained in the read-out state; a state where the charges are to be transferred down the VCCD and out through the HCCD. In regard to applicant's arguments (p. 16, paragraph 2), the transferring of these pixels is performed in the forward direction (Figure 2D). The claim language can be interpreted in a way that the forward or reverse direction is an option. In regard to applicant's arguments (p. 17, paragraph 1), the examiner respectfully disagrees. In every CCD, a driving means is inherent in the system. Such a driving means qualifies as a processing means. In regard to applicant's arguments (p. 17, paragraph 3), it respectfully submitted that the examiner interprets preliminary measurements as a period that last up until the main exposure signal is conducted. As interpreted, this period includes the time that the operating mode is switched from thin out to normal. The examiner believes all arguments have been addressed.

Claim Rejections - 35 USC § 102

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claim 20 is rejected under 35 U.S.C. 102(e) as being anticipated by Kobayashi et al. (US # 6,750,911).

As to claim **20**, Kobayashi et al. teaches an image capturing apparatus (Figure 1, digital camera "10") including: an image pickup device (Figure 1, CCD imager "20") having a plurality of pixels that are provided with a photoelectric converting means (Figure 2, Col. 4, Lines 22-26) and arranged in a given pattern (Figure 2), a control means for controlling said image pickup device (TG "22"), and an image processing means to which signal charges output from said image pickup device are input (Figure 1, A/D Converter; Col. 4, Lines 56-58), wherein said control means is capable of switching in the course of shooting moving images (Col. 8, Lines 11-49; Col. 9, Lines 30-32) between: an omission readout mode (Figure 5(A) and Figure 5(B); Col. 5, Lines 66,67, "...thinning out reading scheme..."), which calls for reading out the signal charges of a part of said image pickup device (Figure 5(A) and Figure 5B; Col. 5, Lines 66,67, Col. 6, Lines 1-17) and outputting the read-out signal charges to said image processing means (Figure 1, A/D Converter; Col. 4, Lines 56-58), and a summation readout mode (Figure 6(A) and Figure 6(B), Col. 6, Lines 18,19, "...pixel-mixing reading scheme..."), which calls for reading out the signal charges of the pixels of said image pickup device (Figure 6(A), Col. 6, Lines 18-20), summing up the signal charges of a plurality of pixels each (Figure 6(A), Col. 6, Lines 18-30), and outputting the summed-up signal charges to said image processing means (Figure 1, A/D Converter; Col. 4, Lines 56-58), wherein: the control means is adapted to switch the driving mode (see Kobayashi et al., Col. 8, Lines 11-52) between: an omission readout mode (see

Kobayashi et al., Col. 8, Lines 47-49, "...thinning-out mode..."), which calls for reading out the signal charges of a part of said image pickup device (see Kobayashi et al., Figure 5(A) and Figure 5(B)) and outputting the read-out signal charges to said image processing means (see Kobayashi et al., Figure 1, A/D Converter; Col. 4, Lines 56-58), a summation readout mode (see Kobayashi et al., Col. 8, Lines 50-52), which calls for reading out the signal charges of the pixels of said image pickup device (see Kobayashi et al., Figure 6(A) and Figure 6(B)), summing up the signal charges of a plurality of pixels (see Kobayashi et al., Figure 6(A) and Figure 6(B)) and outputting the summed-up signal charges to said image processing means (see Kobayashi et al., Figure 1, A/D Converter; Col. 4, Lines 56-58), and a full-pixel individual readout mode which calls for individually reading out and using the signal charges of nearly all the pixels of said image pickup device (see Kobayashi et al., Col. 5, Lines 57-65, "...all pixel reading,...without being mixed with each other...").

Claim Rejections - 35 USC § 103

5. Claims 1-4,7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Udagawa et al. (US # 5,880,781) in view of Kobayashi et al. (see Patent Number above).

Claim 7 will be discussed first.

As to claim 7, Udagawa et al. teaches an image capturing apparatus (Figure 3, still video camera) including a solid-state image pickup device (Figure 3, CCD "3") and a driving circuit (Figure 3, CCD Driver "2") for driving said solid-state image pickup device (Col. 4, Lines 64-67), wherein: said solid-state image pickup device includes a plurality of pixels that are provided with a photoelectric converting means (Figure 1, Col. 4, Lines 30-35) and consist of pixels of a

first color (Figure 1, cyan pixels "C") and a second color (Figure 1, magenta pixels "M") arranged in a given pattern (Figure 1); said driving circuit includes: a plurality of first transfer paths (Figure 2B, Col. 4, Lines 30-36, "...VCCD.") for reading out and transferring signal charges of said pixels (Figure 2B, Col. 4, Lines 35,36), and a second transfer path (Figure 13E, HCCD; *{It is inherent in the system of Udagawa et al. that the second transfer path be included in the Figures 2A-D. Figure 13E is cited just to show applicant that a second transfer path does exist.}*) for reading out and transferring the signal charges transferred from said first transfer paths (Figure 13G; Col. 5, Lines 36-58); said driving circuit functions to: generate first summed charges (Figure 2D, C+M) by: reading out onto said first transfer paths a plurality of pixels that constitutes all or a part of the pixels of certain colors (Figure 2B, C1 and M1 are read out; Col. 2, Lines 62-67; Col. 3, Lines 1-17), while retaining the signal charges of specific pixels of those read in the previous step mentioned above by maintaining said specific pixels in the read-out state (Figure 2D, M1 retained in the VCCD), transferring the other signal charges read in said previous step (Figure 2D, C1 is transferred down to be added to M1) and adding the transferred signal charges to the retained signal charges (Figure 2D, C+M); generate second summed charges (C+G) by: reading out to the first transfer paths a plurality of signal charges of the pixels of certain colors (Figure 2B, C3 and G3) in the state where said first summed charges are located apart from where said plurality of signal charges of the pixels of the second color are going to be read (Figure 2D, C+M located apart from C+G), and summing up said signal charges of the pixels of the second certain colors on either one of the first transfer paths or the second transfer path, or both the first transfer paths and the second transfer path (Figure 2D, C+G is added on the first transfer path (VCCD)); and transfer said first summed charges and the second summed

charges to the second transfer path (Figure 2D, C+M and C+G transferred down to the HCCD); and output the first summed charges and the second summed charges from the second transfer path (Figure 3, *{It is inherent in the system of Udagawa et al. that the added signal charges be transferred out of the HCCD to the S/H A/D block of Figure 3*). The claim differs from Udagawa et al. in that it requires that the reading out and summing of said certain colors be of a same first color and a same second color.

In the same field of endeavor, Kobayashi et al. teaches a CCD driving method and apparatus for reading out, transferring, and summing of signals of a same first and second color (Figure 6(A), R3 + R4, G3 + G4; Col. 6, Lines 18-35). In light of the teaching of Kobayashi et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to include the reading out, transferring, and summing of signals of a same first and second color in the system of Udagawa et al., because an artisan of ordinary skill would recognize that reading out and transferring the signals of a same first and second color to be summed would provide a filtering process to be performed within the CCD imager, thereby removing aliasing components. Accordingly, there is no necessity of newly providing a filter circuit to remove noise (see Kobayashi et al., Col. 1, Lines 58-63).

As to claim **1**, claim 1 is a method claim corresponding to the apparatus claim 7. Therefore, claim 1 is analyzed and rejected as previously discussed with respect to the apparatus claim 7.

As to claim **2**, Udagawa et al., as modified by Kobayashi et al., teaches a solid-state image pickup device driving method as claimed in claim 1, wherein: said first and second summation processes are performed with charges that have been read out to the first transfer

paths being transferred in the forward or reverse direction (see Udagawa et al., Figure 2B, charges transferred in the right (forward) direction).

As to claim **3**, Udagawa et al., as modified by Kobayashi et al., teaches a solid-state image pickup device driving method as claimed in claim 1, wherein: said second summation process is performed with a plurality of charges of pixels of the second color being read out to given locations on the second transfer path (see Udagawa et al., Figure 2D, Figure 13F; Kobayashi et al., Figure 6(A), *{It is inherent in the system of Udagawa et al., as modified by Kobayashi et al., that the summed charges R3 + R4, G3 + G4 will be transferred to given locations on the second transfer path (HCCD), as shown in the downward direction arrow of Figure 2D in Udagawa et al.}*).

As to claim **4**, Udagawa et al., as modified by Kobayashi et al., teaches a solid-state image pickup device driving method as claimed in claim 1, wherein: a charge coupled device (see Figure 1, Figure 2A; Col. 4, Lines 30-33) having charge readout electrodes (Figure 2A, Gates V1-V8) respectively corresponding to the pixels (see Figure 2A, V1, V2 belonging to C1, V3, V4 belonging to M1) is provided for the first transfer paths so that said readout and retention are performed by applying charge readout voltages to said charge readout electrodes (Col. 4, Lines 35-41; *{It is inherent in the system of Udagawa et al., as modified by Kobayashi et al., that voltages are applied to the gates (electrodes).}*).

6. Claims 5,6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Udagawa et al. (see Patent Number above) in view of Kobayashi et al. (see Patent Number above) and further in view of Hattori et al. (US # 20050012826).

As to claim **5**, Udagawa et al., as modified by Kobayashi et al., teaches a solid-state image pickup device driving method as claimed in 1, wherein the manner of driving the solid-state image pickup device can be switched to: a first driving mode provided to perform said first summation process, said second summation process, and said sum output process (see Udagawa et al., Col. 4, Lines 49-55). The claim differs from Udagawa et al., as modified by Kobayashi et al., in that it further requires that a second driving mode be provided to read out the charges of the respective pixels individually to the first transfer paths, individually transfer the read charges to the second transfer path, and output said charges from the second transfer path.

In the same field of endeavor, Hattori et al. teaches a driving method and apparatus for a CCD (Abstract) which can be switched between an all-pixel read mode where charges are read individually, and a thinned out read mode ([0134]). In light of the teaching of Hattori et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to include an all pixel read mode in the system of Udagawa et al., as modified by Kobayashi et al., because an artisan of ordinary skill in the art would recognize that all-pixel read out schemes allow for the capture of high resolution still images (Hattori et al., [0134], Lines 15-19).

As to claim **6**, Udagawa et al., as modified by Kobayashi et al. and Hattori et al., teaches a solid-state image pickup device driving method as claimed in claim 5; wherein: said first driving mode is the moving image mode for shooting a moving image, and said second driving mode is the still image mode for shooting a still image (see Hattori et al., [0134]).

7. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Udagawa et al. (see Patent Number above) in view of Kobayashi et al. (see Patent Number above) and further in view of Yu (US # 6,034,366).

As to claim **8**, Udagawa et al., as modified by Kobayashi et al., teaches an image capturing apparatus as claimed in claim 7. The claim differs from Udagawa et al., as modified by Kobayashi et al., in that it requires that the image capturing apparatus is provided with a processing means that is capable of reversing the order of the first summed charges and the second summed charges output from the solid-state image pickup device.

In the same field of endeavor, Yu teaches two horizontal transfer registers for transferring charges up as well as down (Figure 2A). In light of the teaching of Yu, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a second horizontal transfer register in the system of Udagawa et al., as modified by Kobayashi et al., because an artisan of ordinary skill in the art would recognize that such a supplemental register would allow for different color charges to split up if need be (see Yu, Abstract, Lines 10-13) and an increase in the speed of the CCD readout.

8. Claims 11,9,10,12,16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al. (see Patent Number above) in view of Udagawa et al. (see Patent Number above).

As to claim **11**, Kobayashi et al. teaches an image capturing apparatus (Figure 1, digital camera "10") including: an image pickup device (Figure 1, CCD imager "20") having a plurality of pixels that are provided with a photoelectric converting means (Figure 2, Col. 4,

Lines 22-26) and arranged in a given pattern (Figure 2), a control means for controlling said image pickup device (TG "22"), and an image processing means to which signal charges output from said image pickup device are input (Figure 1, A/D Converter; Col. 4, Lines 56-58), wherein: said control means is capable of switching modes during preliminary measurements (Col. 8, Lines 11-52) between: an omission readout mode (Figure 5(A) and Figure 5(B); Col. 5, Lines 66,67), which calls for reading out the signal charges of a part of said image pickup device (Figure 5(A) and Figure 5(B); Col. 5, Lines 66,67; Col. 6, Lines 1-4) and outputting the read-out signal charges to said image processing means (Figure 1, A/D Converter; Col. 4, Lines 56-58), a summation readout mode (Figure 6(A) and Figure 6(B), Col. 6, Lines 18,19), which calls for reading out the signal charges of the pixels of said image pickup device (Figure 6(A) and Figure 6(B); Col. 6, lines 18-20), summing up the signal charges of a plurality of pixels of the respective same colors (Figure 6(A) and Figure 6(B); Col. 6, Lines 18-30), and outputting the summed-up signal charges to said image processing means (Figure 1, A/D Converter; Col. 4, Lines 56-58). The claim differs from Kobayashi et al. in that it further requires the control means to switch to a mixed-color summation readout mode, which calls for summing up the signal charges of a plurality of pixels of different colors, and outputting the summed charges to an image processing means.

In the same field of endeavor, Udagawa et al. teaches a mode of operation selected when a preliminary measurement is taking place (Col. 4, Lines 49-55) which is a mixed-color summation read out mode, which calls for summing up signal charges of a plurality of different colors (Figure 2D, C+M, C+G), and outputting the summed charges to an image processing means (Figure 3, S/H A/D "4"). In light of the teaching of Udagawa et al., it would have been

obvious to one of ordinary skill in the art at the time the invention was made to include a mixed-color summation mode in the system of Kobayashi et al., because an artisan of ordinary skill in the art would recognize that mixed-color summations allow for the number of carriers read out to be halved and a chrominance signal can be attained (see Udagawa et al., Col. 2, Lines 8-29) in a high sensitivity color filter (see Udagawa et al., Col. 1, Lines 11-23).

As to claim **9**, Kobayashi et al., as modified by Udagawa et al., teaches an image capturing apparatus as claimed in claim 11, wherein said control means is capable of switching in the course of shooting moving images (Col. 8, Lines 11-49; Col. 9, Lines 30-32) between: an omission readout mode (Figure 5(A) and Figure 5(B); Col. 5, Lines 66,67, "...thinning out reading scheme..."), which calls for reading out the signal charges of a part of said image pickup device (Figure 5(A) and Figure 5B; Col. 5, Lines 66,67, Col. 6, Lines 1-17) and outputting the read-out signal charges to said image processing means (Figure 1, A/D Converter; Col. 4, Lines 56-58), and a summation readout mode (Figure 6(A) and Figure 6(B), Col. 6, Lines 18,19, "...pixel-mixing reading scheme..."), which calls for reading out the signal charges of the pixels of said image pickup device (Figure 6(A), Col. 6, Lines 18-20), summing up the signal charges of a plurality of pixels each (Figure 6(A), Col. 6, Lines 18-30), and outputting the summed-up signal charges to said image processing means (Figure 1, A/D Converter; Col. 4, Lines 56-58).

As to claim **10**, Kobayashi et al., as modified by Udagawa et al., teaches an image capturing apparatus as claimed in claim 11, wherein: the image pickup device is a CCD solid-state image pickup device (Figure 1, CCD imager "20") having a plurality of pixels of a plurality of colors arranged in a given pattern (Figure 2), and the summation readout mode calls

for summation of signal charges of a plurality of pixels of the respective same colors (Figure 6(A) and Figure 6(B), R3 + R4, G3 + G4, etc.).

As to claims **12**, Kobayashi et al., as modified by Udagawa et al., teaches an image capturing apparatus as claimed in claim 11, wherein: the control means is adapted to switch the driving mode to drive the image pickup device between the summation readout mode and the omission readout mode in accordance with the light level of the shooting conditions (see Kobayashi et al., Col. 8, Lines 11-52).

As to claim **16**, Kobayashi et al., as modified by Udagawa et al., teaches an image capturing apparatus as claimed in claim 11, wherein: the control means is adapted to switch the driving mode (see Kobayashi et al., Col. 8, Lines 11-52) between: an omission readout mode (see Kobayashi et al., Col. 8, Lines 47-49, "...thinning-out mode..."), which calls for reading out the signal charges of a part of said image pickup device (see Kobayashi et al., Figure 5(A) and Figure 5(B)) and outputting the read-out signal charges to said image processing means (see Kobayashi et al., Figure 1, A/D Converter; Col. 4, Lines 56-58), a summation readout mode (see Kobayashi et al., Col. 8, Lines 50-52), which calls for reading out the signal charges of the pixels of said image pickup device (see Kobayashi et al., Figure 6(A) and Figure 6(B)), summing up the signal charges of a plurality of pixels (see Kobayashi et al., Figure 6(A) and Figure 6(B)) and outputting the summed-up signal charges to said image processing means (see Kobayashi et al., Figure 1, A/D Converter; Col. 4, Lines 56-58), and a full-pixel individual readout mode which calls for individually reading out and using the signal charges of nearly all the pixels of said image pickup device (see Kobayashi et al., Col. 5, Lines 57-65, "...all pixel reading,...without being mixed with each other...").

9. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al. (see Patent Number above) in view of Udagawa et al. (see Patent Number above) in view of Yamada et al. (US # 5,995,137) and further in view of Misawa (US 20010048477).

As to claim **13**, Kobayashi et al. teaches an image capturing apparatus as claimed in claim 11. The claim differs from Kobayashi et al. in that it requires the control means to detect a possibility of generation of moire (false color) and drive the image pickup device in the summation readout mode when there is the possibility of generation of moiré (false color), and in the omission readout mode in the other situations. *Applicant is asked to reference US 20040227845 if there is any discrepancy about moiré being interpreted as false color. In [0005], Kawai teaches moiré as being an example of false color. Priority does not exist over applicant's invention, but there is no need, because examiner is merely showing evidence of fact of phenomena existing in the nature of CCD devices.*

In the same field of endeavor, Yamada et al. teaches a moiré detecting section (Figure 1, "10"; Col. 4, Lines 33-35). In light of the teaching of Yamada et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a moire detecting section in the control means of Kobayashi et al., because an artisan of ordinary skill in the art would recognize that a moiré detecting section would allow the system to detect an image deteriorating occurrence.

In the same field of endeavor, Misawa teaches the use of summing signals to create complementary color signals and to ultimately prevent false colors ([0048]). In light of the teaching of Misawa, it would have been obvious to one of ordinary skill in the art to operate the

system of Kobayashi et al., as modified by Yamada et al., in a summation mode if moire (false colors) is recognized, because an artisan of ordinary skill in the art would recognize that a summation process would effectively prevent false colors (see Misawa, [0048]).

10. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al. (see Patent Number above) in view of Udagawa et al. (see Patent Number above) in view of Yoshida (US # 6,809,763) and further in view of Watanabe (US # 5,420,629).

As to claim **14**, Kobayashi et al. teaches an image capturing apparatus as claimed in claim 9 and a control means (Figure 1, microcomputer "20"). The claim differs from Kobayashi et al. in that it further requires the control means detects a possibility of generation of smear and drives the image pickup device in the omission readout mode when there is the possibility of generation of smear, and in the summation readout mode in the other situations.

In the same field of endeavor, Yoshida teaches a smear detecting unit (Figure 1, smear level detecting section "8-1"). In light of the teaching of Yoshida, it would have been obvious to one of ordinary skill in the art at the time invention was made to include a smear detecting section in the control means of Kobayashi et al., because an artisan of ordinary skill in the art would recognize that a smear level detecting section would allow the system to detect and act on an image deteriorating occurrence.

In the same field of endeavor, Watanabe teaches the use of interline transfer, because of smear (Col. 2, Lines 59-62). In light of the teaching of Watanabe, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include using an interline transfer of signals upon recognition of smear as taught by Kobayashi et al., as modified by

Yoshida, because an artisan of ordinary skill in the art would recognize that smear can be avoided by reading out charges in an interline type (see Watanabe, Col. 2, Lines 59-62).

11. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al. (see Patent Number above) in view of Udagawa et al. (see Patent Number above) in view of Tanaka et al. (US # 6,559,889).

As to claim **15**, Kobayashi et al. teaches an image capturing apparatus as claimed in claim 9, and driving the CCD in summation mode (see Kobayashi et al., Figure 6(A) and Figure 6(B)). The claim differs from Kobayashi et al. in that it further requires that the image capturing apparatus include a saturation preventing means controlled by the control means to prevent saturation of signals in the image pickup device.

In the same field of endeavor, Tanaka et al. teaches varying the potential of an overflow barrier to increase a saturation amount in photo detectors (Col. 7, Lines 52-58). In light of the teaching of Tanaka et al., it would have been obvious to include this saturation prevention means in the controls means of Kobayashi et al. when the read out mode is the summation mode, because an artisan of ordinary skill in the art would recognize that characteristics such as S/N ratio and dynamic range can be prevented from being deteriorated due to the reduction of the saturation signal charge amount (see Tanaka et al., Col. 7, Lines 60-62).

12. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al. (see Patent Number above) in view of Yamada et al. (US # 5,995,137) and further in view of Misawa (US 20010048477).

As to claim **17**, Kobayashi et al. teaches an image capturing apparatus (Figure 1, digital camera "10") including: an image pickup device (Figure 1, CCD imager "20") having a plurality of pixels that are provided with a photoelectric converting means (Figure 2, Col. 4, Lines 22-26) and arranged in a given pattern (Figure 2), a control means for controlling said image pickup device (TG "22"), and an image processing means to which signal charges output from said image pickup device are input (Figure 1, A/D Converter; Col. 4, Lines 56-58), wherein said control means is capable of switching in the course of shooting moving images (Col. 8, Lines 11-49; Col. 9, Lines 30-32) between: an omission readout mode (Figure 5(A) and Figure 5(B); Col. 5, Lines 66,67, "...thinning out reading scheme..."), which calls for reading out the signal charges of a part of said image pickup device (Figure 5(A) and Figure 5B; Col. 5, Lines 66,67, Col. 6, Lines 1-17) and outputting the read-out signal charges to said image processing means (Figure 1, A/D Converter; Col. 4, Lines 56-58), and a summation readout mode (Figure 6(A) and Figure 6(B), Col. 6, Lines 18,19, "...pixel-mixing reading scheme..."), which calls for reading out the signal charges of the pixels of said image pickup device (Figure 6(A), Col. 6, Lines 18-20), summing up the signal charges of a plurality of pixels each (Figure 6(A), Col. 6, Lines 18-30), and outputting the summed-up signal charges to said image processing means (Figure 1, A/D Converter; Col. 4, Lines 56-58). The claim differs from Kobayashi et al. in that it further requires that the control means detects a possibility of generation of moiré and drives the image pickup device in the summation readout mode when there is the possibility of generation of moiré, and in the omission readout mode in the other situations.

In the same field of endeavor, Yamada et al. teaches a moiré detecting section (Figure 1, "10"; Col. 4, Lines 33-35). In light of the teaching of Yamada et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a moire detecting section in the control means of Kobayashi et al., because an artisan of ordinary skill in the art would recognize that a moiré detecting section would allow the system to detect an image deteriorating occurrence.

In the same field of endeavor, Misawa teaches the use of summing signals to create complementary color signals and to ultimately prevent false colors ([0048]). In light of the teaching of Misawa, it would have been obvious to one of ordinary skill in the art to operate the system of Kobayashi et al., as modified by Yamada et al., in a summation mode if moire (false colors) is recognized, because an artisan of ordinary skill in the art would recognize that a summation process would effectively prevent false colors (see Misawa, [0048]).

13. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al. (see Patent Number above) in view of Yoshida (US # 6,809,763) and further in view of Watanabe (US # 5,420,629).

As to claim **18**, Kobayashi et al. teaches an image capturing apparatus (Figure 1, digital camera "10") including: an image pickup device (Figure 1, CCD imager "20") having a plurality of pixels that are provided with a photoelectric converting means (Figure 2, Col. 4, Lines 22-26) and arranged in a given pattern (Figure 2), a control means for controlling said image pickup device (TG "22"), and an image processing means to which signal charges output from said image pickup device are input (Figure 1, A/D Converter; Col. 4, Lines 56-58), wherein said

control means is capable of switching in the course of shooting moving images (Col. 8, Lines 11-49; Col. 9, Lines 30-32) between: an omission readout mode (Figure 5(A) and Figure 5(B); Col. 5, Lines 66,67, "...thinning out reading scheme..."), which calls for reading out the signal charges of a part of said image pickup device (Figure 5(A) and Figure 5B; Col. 5, Lines 66,67, Col. 6, Lines 1-17) and outputting the read-out signal charges to said image processing means (Figure 1, A/D Converter; Col. 4, Lines 56-58), and a summation readout mode (Figure 6(A) and Figure 6(B), Col. 6, Lines 18,19, "...pixel-mixing reading scheme..."), which calls for reading out the signal charges of the pixels of said image pickup device (Figure 6(A), Col. 6, Lines 18-20), summing up the signal charges of a plurality of pixels each (Figure 6(A), Col. 6, Lines 18-30), and outputting the summed-up signal charges to said image processing means (Figure 1, A/D Converter; Col. 4, Lines 56-58). The claim differs from Kobayashi et al. in that it further requires that the control means is adapted to detect a possibility of generation of smear and drive the image pickup device in the omission readout mode when there is the possibility of generation of smear, and in the summation readout mode in the other situations.

In the same field of endeavor, Yoshida teaches a smear detecting unit (Figure 1, smear level detecting section "8-1"). In light of the teaching of Yoshida, it would have been obvious to one of ordinary skill in the art at the time invention was made to include a smear detecting section in the control means of Kobayashi et al., because an artisan of ordinary skill in the art would recognize that a smear level detecting section would allow the system to detect and act on an image deteriorating occurrence.

In the same field of endeavor, Watanabe teaches the use of interline transfer, because of smear (Col. 2, Lines 59-62). In light of the teaching of Watanabe, it would have been obvious to

one of ordinary skill in the art at the time the invention was made to include using an interline transfer of signals upon recognition of smear as taught by Kobayashi et al., as modified by Yoshida, because an artisan of ordinary skill in the art would recognize that smear can be avoided by reading out charges in an interline type (see Watanabe, Col. 2, Lines 59-62).

14. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al. (see Patent Number above) in view of Tanaka et al. (US # 6,559,889).

As to claim **19**, Kobayashi et al. teaches an image capturing apparatus (Figure 1, digital camera "10") including: an image pickup device (Figure 1, CCD imager "20") having a plurality of pixels that are provided with a photoelectric converting means (Figure 2, Col. 4, Lines 22-26) and arranged in a given pattern (Figure 2), a control means for controlling said image pickup device (TG "22"), and an image processing means to which signal charges output from said image pickup device are input (Figure 1, A/D Converter; Col. 4, Lines 56-58), wherein said control means is capable of switching in the course of shooting moving images (Col. 8, Lines 11-49; Col. 9, Lines 30-32) between: an omission readout mode (Figure 5(A) and Figure 5(B); Col. 5, Lines 66,67, "...thinning out reading scheme..."), which calls for reading out the signal charges of a part of said image pickup device (Figure 5(A) and Figure 5B; Col. 5, Lines 66,67, Col. 6, Lines 1-17) and outputting the read-out signal charges to said image processing means (Figure 1, A/D Converter; Col. 4, Lines 56-58), and a summation readout mode (Figure 6(A) and Figure 6(B), Col. 6, Lines 18,19, "...pixel-mixing reading scheme..."), which calls for reading out the signal charges of the pixels of said image pickup device (Figure 6(A), Col. 6, Lines 18-20), summing up the signal charges of a plurality of pixels each (Figure 6(A), Col. 6, Lines 18-

30), and outputting the summed-up signal charges to said image processing means (Figure 1, A/D Converter; Col. 4, Lines 56-58). The claim differs from Kobayashi et al. in that it further requires that the image capturing apparatus includes a saturation preventing means adapted to be controlled by the control means to prevent saturation of signals in the image pickup device when the image pickup device is being driven in the summation readout mode.

In the same field of endeavor, Tanaka et al. teaches varying the potential of an overflow barrier to increase a saturation amount in photo detectors (Col. 7, Lines 52-58). In light of the teaching of Tanaka et al., it would have been obvious to include this saturation prevention means in the controls means of Kobayashi et al. when the read out mode is the summation mode, because an artisan of ordinary skill in the art would recognize that characteristics such as S/N ratio and dynamic range can be prevented from being deteriorated due to the reduction of the saturation signal charge amount (see Tanaka et al., Col. 7, Lines 60-62).

Conclusion

15. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony J. Daniels whose telephone number is (571) 272-7362. The examiner can normally be reached on 8:00 A.M. - 4:30 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Ometz can be reached on (571) 272-7593. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AD
9/1/2005

NGOC-YEN VU
PRIMARY EXAMINER